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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,243	05/30/2001	Robert L. Brainard	50540	8839

7590 01/08/2003

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Boston, MA 02209

EXAMINER
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LEE, SIN J

ART UNIT	PAPER NUMBER
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1752

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DATE MAILED: 01/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/870,243

Applicant(s)

BRAINARD ET AL.

Examiner

Sin J Lee

Art Unit

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 7-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

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### DETAILED ACTION

1. Applicants canceled claims 4-6 and 20-40.
2. In view of the amendment, the previously made rejections on claims 1-3, 5, 6, and 20-26 over Ikemura et al'446, the previously made rejections on claims 1-3, 5, 6, and 20-26 over Chiba et al'900, and the previously made rejections on claims 36 and 37 over Lin et al'505 are hereby withdrawn.
3. Due to newly found prior arts, the following rejections are made non-final.
4. Claims 1-3 and 7-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al (6,103,447).

Chen et al teach (col.1, lines 7-17, col.3, lines 3-12, lines 15-22) a positive-tone chemically amplified resist system for use in mid-UV, deep-UV, *extreme UV*, X-ray, and e-beam lithography comprising (a) a polymer resin composition (a blend of at least two miscible aqueous base soluble polymer resins, one of which is partially protected with a high activation energy protecting group and the other of which is partially protected with a low activation energy protecting group), (b) and acid generator, and © a solvent. As the polymer resin protected with a high activation energy protecting group, Chen et al teach (see Example 5) a terpolymer consisting of *hydroxystyrene*, *styrene*, and *tertiary butyl acrylate*, and as the polymer resin protected with a low activation energy protecting group, Chen et al teach (see col.4, lines 53-56, lines 65-67) a polymer protected with methoxycyclohexanyl *ketal* group. Chen teaches (col.7, lines 10-14) that

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his chemically amplified resist system comprises from about 0.005 to about 10 wt% of the acid generator. Since 10 wt% is included as the higher end of the taught range, it is the Examiner's position that one of ordinary skill in the art would immediately envisage using 10 wt% of the acid generator in Chen's chemically amplified resist system. Although in Example 5, Chen spin-coats his resist solution onto a silicon wafer and then expose it to DUV light, since Chen teaches that his chemically amplified resist system is for use in mid-UV, deep-UV, *extreme UV*, X-ray, and e-beam, it is the Examiner's position that one of ordinary skill in the art would immediately envisage exposing Chen's resist coated on the silicon wafer to extreme UV. Therefore, the prior art teaches present inventions of claims 1-3, 7-10, 16-19.

With respect to present claims 11 and 13-15, Chen et al teach (see Example 5) di(t-butylphenyl)iodonium perfluorooctane sulfonate as one of the examples for his photoacid generator. Therefore, the prior art teaches present inventions of claims 11 and 13-15.

With respect to present claim 12, Chen et al teach (col.6, lines 7-8) that nitrobenzyl compound (as well as onium salts, sulfonates, carboxylates) can also be used as his photoacid generator. Therefore, it is the Examiner's position that one of ordinary skill in the art would immediately envisage using nitrobenzyl compound as Chen's photoacid generator. Therefore, the prior art teaches present invention of claim 12.

5. Claims 1-3 and 11-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Barclay et al (6,492,086 B1).

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In Example 8 (see also, col.1, lines 6-11), Barclay teaches a chemically-amplified positive-acting photoresist composition comprising phenol/styrene/2-methyladamantyl methacrylate terpolymer and di-t-butyl phenyl iodonium camphorsulfonate (in the amount of *solid ratio of 4.72* which is about 5). Barclay spin-coats the photoresist composition onto a silicon wafer and then expose it with a KrF laser (248 nm). Barclay furthermore teaches (col.13, lines 33-36) that his resists also will be useful for exposure with E-beam exposure, and extreme UV exposure such as sub-50 nm or sub-20 nm exposure, particularly 13 nm exposure. Based on this teaching, it is the Examiner's position that one of ordinary skill in the art would immediately envisage exposing Barclay's photoresist-coated silicon wafer in Example 8 to extreme UV. Therefore, the prior art teaches present inventions of claims 1-3, 9, 11, 13, and 16-18.

With respect to present claims 12, 14, and 15, Barclay teaches (col.11, lines 29-50, col.12, lines 19-26) that as his photoacid generator, N-[(perfluorooctanesulfonyl)oxy]-5-norbornene-2,3-dicarboximide (a non-ionic compound) as well as iodonium compounds having anions of perfluorooctanesulfonate or perfluorobutanesulfonate can also be used. Therefore, the prior art teaches present inventions of claims 12, 14, and 15.

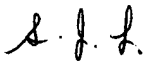
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is (703) 305-0504. The examiner can normally be reached on Monday-Friday from 8:30 am EST to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Janet Baxter, can be reached on (703) 308-2303. The fax phone number for the

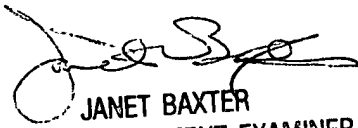
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organization where this application or proceeding is assigned is (703) 872-9311 for after final responses or (703) 872-9310 for before final responses.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0661.



S. Lee  
January 6, 2003



JANET BAXTER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700